Challenge Program on **Water and Food**	**ANNUAL REPORT** **1 January 2008 to 31 December 2008**

1 PROJECT PROFILE (this information will appear once only as a header sheet to your reports when they are electronic)

PROJECT NO.: 25	**PROJECT TITLE:** Companion modelling for resilient water management: Stakeholders' perceptions of water dynamics and collective learning at the catchment scale.
LEAD CPWF THEME: 2	**LEAD CPWF BENCHMARK BASIN(S): Mekong**
SECONDARY CPWF THEME(S): 4	**SECONDARY RIVER BASIN(S): Pho Chu, Gamri Chu & Kuri Chu rivers in Bhutan, Bhramapoutre**
MANAGING CENTER: CIAT	**PROJECT DURATION: 4 years (up to 31/12/2009)**

2 LINKED QUARTERLY PROGRESS REPORT (MILESTONE PLAN)

(this section of the report should contain your milestone tables, embedded in an excel spreadsheet. One three monthly section per page. You are required to provide comments against your milestones in this report period).

This Annual Report is linked to:	**PN25-CPWF_SixMonthlyReport_Jan-June08_0809**

3 SUMMARY OF ACHIEVEMENTS OVER THE PAST TWELVE MONTHS

(a) Project Outputs: what your project has achieved, and the technical/scientific progress and rigour of your project (which is also necessary for assessment).
(b) CPWF Outputs: how your project relates to the outputs of one or more of the CPWF five research themes and one or more of the benchmark basins.
(c) Outcomes and Impact: what outcomes have been achieved over the year, and how they have impacted on your initial or end users – i.e. who has used your results and to what end? This is also about dissemination pathways.
(d) Enables you to comment on your experiences. This information feeds into the new log frame that has been requested for our medium term plan.
Glossary of terms (extracted from the CGIAR Medium Term Plan Guidelines):
Outputs: are the products of research with a defined time-line, contributing to reaching the [CPWF] goals by offering solutions to problems identified during the planning process.
Outcomes: are the external uses, adoptions, or influences of the [CPWF] output or outputs (e.g. by partners, stakeholders, clients) that lead to changes in knowledge, attitudes, policies, research capacities, agricultural practices, productivity, sustainability, or other factors required in order to achieve the intended impact.
Impacts: are the longer range social, environmental and economic benefits consistent with the [CPWF] goals, e.g. increased agricultural productivity through better water management, better nutrition, sustainable resource management.

3 (a) PROJECT OUTPUTS: Technical Elements

3.1 What are the project's main technical achievements (listed as outputs) over the past year?

Nature of project output/s	Details
New methodologies for better communication and coordination mechanisms	<u>Activity 1.1: State of the art on knowledge acquisition & participatory modelling</u> Following the two seminars held in Bangkok on 17 January and 25 February 2008, the project PhD students used the list of key references from the literature that was collectively discussed and the common framework assembled to analyze selected references to prepare the state of the art chapters in their respective dissertations (For more details see six monthly report for 1st semester of 2008). They usually present a comparative analysis of a selection of case studies

- Chapters in PhD theses, - Working & conference papers - Journal articles - Project website	relevant to the specific topic of their own research topic. These thesis chapters are also used to prepare sections of journal articles (for example in the couple of manuscripts submitted for a special issue of EMS journal on "modelling with stakeholders" in which PN25 team members François Bousquet and Christophe Le Page are guest editor and reviewer respectively). Activity 1.2: Methodology for co-design and implementation of local models - The use and tailoring of the Companion Modelling (ComMod) approach applied to concerted water management with local stakeholders was completed during this 3rd year at research sites (3 in Thailand and 2 in Bhutan) and continued at another 4 sites (2 in Thailand and 1 each in Bhutan and Vietnam) with satisfactory results and no change in the work plan apart from the delayed completion of model implementation and model use in field activities at several sites. - By the end of the year, three Thai and Vietnamese Ph.D. students had totally or almost completed their agent-based models (ABM) and their use with stakeholders in the field and were busy analyzing simulation results and writing their thesis chapters: . In Bac Lieu province, Mekong delta, Vietnam (intensively farmed irrigated coastal area): Knowledge on the effects of increased salinity on rice yields in rice-shrimp systems was acquired through interviews with local farmers and from a panel of key informants at the study site. Rules of change were extracted from that knowledge to prepare ABM simulations. The ABM is being refined to include more socio-economic factors thanks to short trips made by the project Multi-Agent System modeller Christophe Le Page in September 2008 and a last one planned for February 2009. Ph.D. candidate Le Canh Dung has one journal article accepted and the defence of this dissertation at the Faculty of Science of Chulalongkorn University, Bangkok is now planned for late April 2009. . The Ban Mak Mai model developed by Warong Naivinit in the Lam Dome Yai watershed of lower northeast Thailand is completed and a series of participatory simulations is under way with villagers. The defence of this Ph.D. dissertation at the Faculty of Science of Chulalongkorn University, Bangkok is also planned for late April 2009. . Mae Hae site, Chiang Mai province, north Thailand: The research process incorporated multi-level institutions in sharing perceptions, increasing awareness, promoting action change and engagement. Village leaders and the village network pursued the initiated negotiation process and reached an agreement on new rules for water use. The ABM is now used to simulate scenarios taking into account five major factors (Social network / dissemination of information, lobbying system of the village network to vote against forest encroachment, sanction period applied to the owner of new farm plot, monitoring level that determine the awareness and action in conserving the forest, and the operation of the village network (strength of local institution). Simulation results are being analyzed to see the contribution of these factors to the following indicators: Cash income and distribution (equity, total economic return), New land use (watershed vulnerability), crop failure, and water regulation (emergence a rule and its effectiveness). Ph.D. candidate Panomsak Promburom has one journal article accepted in Environmental Modelling and Software, and the defence of this dissertation at Lyon I University in France is now planned for mid-2009. - Progress made at the two less advanced sites is as follows: . Doi Tiew site, Nan province, north Thailand: Land use and land cover change at this site over the last 30 years was completed. A farmer typology based on their diversity of cattle raising strategies was built to characterize human agents in the subsequent ABM. Vegetation biomass dynamics was observed during the wet and dry seasons in different land use type and under various grazing pressures. A prototype ABM on vegetation dynamics influenced by cattle grazing in headwater areas under reforestation was implemented and successfully used with herders and foresters in October 2008 during a field workshop based on a computer-assisted role-playing game (RPG). Refinements are being made based on villagers and government officers requirements, and a 2nd field workshop is planned for January 2009. . Kengkhar site, Eastern Bhutan: the consultation on design of roof water collection and the network of water tanks was carried out to install roof water collection in Geog administration office and RNR Extension office, with the community providing labour and PN25 the

materials not available locally (cement, gutters, HDPE pipe and plastic tank). Constructed the roof water collection in 2 offices is now completed. Following the roof water collection demonstration in Geog administration office, consultation with community members (farmers, school and basic health unit) for up-scaling the roof water collection to supplement spring water has been discussed. A land use and livelihood system survey in Kengkhar was also implemented and a first version of Kengkhar ABM "replaying the game" sessions organized in April 2008 has been produced in November 2008 during a trip to Bhutan by the project Multi-Agent System modeller Christophe Le Page.
. Also in Bhutan, the computer version of the "7 villages" to simulate the game used at the former Lingmuteychu site was finalized by Cemagref (Olivier Barreteau), Cirad (François Bousquet) and MoA Bhuthan (Tayan Raj Gurung). This computer version was presented to local villagers of the 7 villages in the sub-watershed, by our Bhutanese collaborator at RNR-RC Bajo and the local extension worker, to get feedback from former game players. Further work to explore the sensitivity of the game outcomes to game parameters is under way.

- A sophisticated presentation of the Ban Mak Mai model developed by Warong Naivinit was also made at the World Water Congress in Montpellier in September 2008 (oral presentation and permanent demonstration of his model and simulations on a wall screen of a booth for 2 days).

- The short presentations of two project case studies dealing with the mediation of irrigation water conflicts (Mae Salaep catchment in upper northern Thailand and the Lingmuteychu sub-watershed in West Central Bhutan) selected to be showcased in a IUCN book titled "Negotiate" were also finalized in late 2008.

Activity 1.3: Synthesis on models

After several rounds of discussions between Cemagref, IWMI and Cirad team members, and reviews of the different models already available (either fully computer-based ABMs, role playing games (RPGs), or hybrid simulators) under the set of PN25 case studies, a common template to describe and compare these various models developed under the project was designed. This template is made of four parts:
- Spatial interface: to provide a copy of the window featuring the spatial interface of the model accompanied by an explicit legend, as well as the specification of spatial display.
- Spatial entities: to provide the list of various spatial entities used in the model with a justification for the smallest spatial entity in relation to the different management units and how they affect decision-making processes.
- Static description: to provide a broad view by a simplified Universal Modelling Language (UML) class diagram, and a table presenting the key attributes of the model and their values.
- Dynamic description: to provide a diagram displaying flows among the various processes and a table with a list of main processes, entities involved, main assumptions, time and space computation steps, as well as social computation level. The diagram could be a UML activity diagram organized in "swimlanes", a sequence or flow diagram, or a hierarchy of diagrams describing the model dynamics.
The template was distributed to all the project partners with examples of models described by using it.

A first short paper comparing the models produced by 8 of the project cases studies was prepared during this review period, and presented at the IFWF2 in November 2008 (see details in the list of project publications during the review period below).

Olivier Barreteau (Cemagref) is now leading the preparation of a report on model synthesis and of a corresponding paper to be presented at the next project technical meeting in Bangkok during 4-8 May 2009. The report will compare the models produced by the project case studies by using the proposed template for model description. Description and comparison of the representation of biophysical and technical processes in companion modelling will be done.

	ComMod implies multi-disciplinarity and specific questions about relationships between field data (observations and perceptions) and modelling of relevant processes linked to climate, hydrology and water uses (technical aspects) processes, and crop modelling. Five key questions are being addressed : - choice of the main processes to be represented / modelled, - precision, nature of data, relationship between observation and actors' perception, - gradual progress of the representation during the modelling process, - choice of a validation approach: social, "technical", etc… - role(s) of biophysical processes knowledge/information/perception/data in the elaboration of scenario and model runs. Activity 3.1. Lessons from past experiments at key sites - Dr. Chu Thai Hoanh from IWMI led, with a dozen of co-authors, the preparation of a first short paper titled "Agent-based modelling to facilitate resilient water management in Southeast and South Asia" presenting a comparative analysis of the project different kinds of models produced at 8 project sites and presented it at the 2nd International Forum on Water and Food of the CPWF, 9-14 November 2008, Addis Ababa, Ethiopia (see details in the list of project publications during the review period below). - Similarly, Mr. Tayan Raj Gurung, Director of Wengkhar RNR-RC under the Ministry of Agriculture, Bhutan, led 6 other co-authors in a first comparative analysis of the effects generated by ComMod processes at 5 different project sites in Bhutan and Thailand. This also led to the preparation of a short paper titled "Effects of Companion Modeling on Water Management: Comparative analysis across five sites in Bhutan and Thailand" presented at the 2nd International Forum on Water and Food of the CPWF, 9-14 November 2008, Addis Ababa, Ethiopia (see details in the list of project publications during the review period below). - Drawing from the lessons learnt from the pioneer Mae Salaep site in the highlands of northern Thailand, an oral communication titled "Rethinking participatory action research in renewable resource management: Companion Modelling in Mae Salaep, Northern Thailand" was presented at the IAMCR Conference on participatory communication research in Stockholm in June 2008. - To facilitate the communication between PN25 teams working at different geographic sites in four countries and the storage of the project outputs, the PN25 website hosted on Chulalongkorn University server was further improved during the review period (see at www.cpwf25.sc.chula.ac.th) thanks to Mrs. Anuttara Tianvorakoon, who receiving special financial support from the Agropolis Montpellier-based Echel Eau Project during 2008. The main menu is made of the following sections: the project, news, partners, set of maps allowing to access documents on research activities at each project site, a photo gallery per site, training activities / PhD student' profiles, list of publications and reports, resources, contact, and a file exchange system for project partners). The site received 325 visits in December 2008.
Degree training, teaching & training modules	Activity 2.2. Degree training - In May 2008, Mrs. Cécile Barnaud successfully defended her doctorate dissertation at Paris Ouest Nanterre-La Défense University on 6 May 2008 and received the unanimous "congratulations" of the jury. Her journal article on the preliminary diagnosis on the Nam Haen agricultural system and resource management problems in Nan province, northern Thailand was published in Southeast Asian Studies journal at Kyoto University in March 2008. She also produced a short article on the use of interactive models in ComMod processes submitted to IFWF2 in late June, 2008. She is now preparing new journal articles focusing on the analysis, monitoring and management of power relationships in ComMod processes in collaboration with the Communication and innovation group at Wageningen University and research center.

	- By the end of the year, three Thai and Vietnamese Ph.D. students had totally or almost completed their agent-based models (ABM) and used them with stakeholders in the field to simulate and assess scenarios. They were busy analyzing simulation results and writing their thesis chapters: . Bac Lieu province, Mekong delta, Vietnam (intensively farmed irrigated coastal area): Ph.D. candidate Le Canh Dung has one journal article accepted and the defence of this dissertation at the Faculty of Science of Chulalongkorn University, Bangkok is now planned for late April 2009. . Lam Dome Yai watershed of lower northeast Thailand: Warong Naivinit is also planning to defend his Ph.D. dissertation at the Faculty of Science of Chulalongkorn University, Bangkok in late April 2009. . Mae Hae site, Chiang Mai province, north Thailand: Ph.D. candidate Panomsak Promburom has one journal article accepted in Environmental Modelling and Software, and the defence of his dissertation at Lyon I University in France is now planned for mid-2009. - The last two less advanced Ph.D. students, Pongchai Dumrongrojwatthana in Thailand and Tayan Raj Gurung in Bhutan completed their 2nd and 1st year of research as planned at the Doi Tiew site, Nan province, north Thailand and Kengkhar site, Eastern Bhutan respectively. - The four most advanced Ph.D. students working in Northern Thailand and the Mekong delta in Vietnam presented their collaborative modelling approach and agent-based models in as many short papers published in the proceedings of the Proceedings of 2nd International Forum on Water and Food of the CPWF, 9-14 November 2008, Addis Ababa, Ethiopia (see details in the list of project publications during the review period below). -To increase the dissemination of knowledge in this field in Thailand, three Thai Ph.D. students made oral presentations of their approach, tools and results in Thai language and published longer papers in the Proceedings of the 4th National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change" on 27-28 May 2008, Chiang Mai (see details in the list of project publications during the review period below). - Ph.D. students, Pongchai Dumrongrojwatthana from Chulalongkorn University was a Foreign Scholar Award winner for the 2009 US-IALE meeting in Snowbird, Utah, USA in April 2009. He will present an oral communication titled “Co-constructing an agent-based model to mediate land use conflict between herders and foresters in northern Thailand”. - Master student Manitchara Thongnoi also completed the monitoring and evaluation of the various effects on the participants generated by the ComMod process led by Warong Naivinit in the Lam Dome Yai watershed of northeast Thailand. She is writing her M.Sc. dissertation and will defend it in the “Integrated farming program” of the Faculty of Agriculture at Ubon Rajathanee University in late February 2009. - Diploma degree student Aita Kumar Bhujel from RNR-RC Bajo in Bhutan started his one year study program in integrated watershed management at Kasetsart University, Bangkok, in July 2008. This is providing him with a good opportunity to interact with several other Asian students doing their research at other PN25 sites in Thailand and Vietnam.
3.2 How do these outputs contribute to your project goal (and possibly those of other CPWF projects	The project objectives are threefold: - To offer a collaborative modelling methodology and its tools to enhance the capacity of expression of the different stakeholders’ perceptions on local water management issues: the activities implemented at each of the project sites contribute directly to this objective. - To train a group of scientists and development officers engaged in the action-research process on this methodology and its tools: this group of young scientist & development officers is at work and, most of the time, they are now the ones leading the project activities at their sites.

(and non-CPWF funded) in the study area?	The teaching & training modules aim to facilitate further expansion of the size of this group. - To analyze concrete water and land management issues at the catchment level, and stakeholders' interactions that are specific to the respective water-related problems identified in each context: each case study originates and is rooted in such concrete water and land management problem. - A group of young Asian lecturers-researchers and development workers is being trained at doctorate, master and diploma degree levels on the concepts, methodologies, and tools of collaborative modelling and action research processes for resilient water management. They are also communicating among them to strengthen a small regional network of ComMod users, and most of them have already registered to become members of the ComMod international scientific network. - The common framework established to describe and compare the characteristics of the different kinds of models developed by the project at various sites is being used by PN25 PhD students in the preparation of their respective dissertations and by PN25 team to carry out the cross sites comparative analysis of the models and case studies. - The first step toward full comparative analyses of the effects of ComMod processes on their participants at various sites has been made. - The PN25 website is also being gradually improved to deposit all the outputs and products of the project and to disseminate them among the CPWF projects and beyond. - Following the presentation of many of the project outputs at IFWF2 in Addis Ababa, PN25 is developing more linkages with other CPWF projects in the Mekong basin.

3 (b) CPWF OUTPUTS: relevance to CPWF thematic areas and basin priorities

3.3 How will the outputs identified above contribute to the CPWF outputs	See the attached list of thematic outputs / basins / projects on which the CPWF logframe is based. Your project may be in more than one output. Please comment individually against each output where your project appears. Refer to differences in the basins in which you are active.
CPWF Outputs	**Project Contributions**
Methods of assessing diversity and dynamics of livelihood	- PN25 uses the same principles of the ComMod collaborative modelling approach at 8 different sites in 3 countries (3 in Bhutan & Northern Thailand with different socio-cultural groups, 1 in lower Northeast Thailand, and 1 in the Mekong delta, Southern Vietnam) to allow a cross-sites comparative analysis of findings from the Mekong delta to the Himalayas through the rainfed lowland and upland areas of the basin. -While at each location the methodology must be adapted to the local context and problem to be examined, the ComMod processes always combine initial diagnostic surveys, interviews, role-playing games (RPG), and computer simulation models co-constructed with the concerned stakeholders. The construction of the RPGs and computer simulation models implies the documentation of the diversity of stakeholders' livelihoods, of their respective strategies and individual decision-making processes regarding he issue at stake. Usually typologies of stakeholders are built and used in the implementation of human agents in the ABMs. -A journal article emphasizing the analysis and use of the diversity of stakeholders' livelihoods and interests when planning a ComMod process was published in 2008 in vol. 45 of Southeast Asian Studies Journal at Kyoto University, Japan (see details in the list of project publications during the review period below).

	- Later in the ComMod processes implemented at the different sites, participatory simulations of scenarios identified by the stakeholders allow to observe and assess the dynamics of the different kinds of agents under varying circumstances. The ABM models are here used as mediating tools to share perceptions, examine the common problem, explore alternative management solutions, and to facilitate coordination and negotiation to mitigate the water use conflict.
Guidelines for multiple use of water supply systems and water sharing	- Providing such guidelines is not a major objective of the project. However, in this project we examine the problem of multiple uses of water and water sharing at different locations with the aim of providing guidelines on how to conceive and set up communication platforms among multiple users to facilitate the mediation of water use conflicts. - For example, at the Lingmuteychu site in Bhutan (where the national policy is supporting such dynamics), the creation of a community-based institution regulating natural resource management at the catchment level was decided and achieved at the end of the ComMod process, and the stakeholders were able to secure external funding to implement their concrete collective action plan. Their "Watershed Management Committee" (WMC) has been operating for two years with support from the local NRM research agency at RNR-RC Bajo. It was able to coordinate the rehabilitation of irrigation channels and is now supporting the construction of water storage tanks in each village of the sub-watershed. A similar effort was attempted at the Mae Salaep site in Northern Thailand but failed, mainly because of the lack of support from the local administrative and development organizations. In the rainfed lowlands of the Lam Dome Yai watershed in northeast Thailand, participating farmers were also exposed to the collective management of a community pond and the difficulty to establish and enforce common rules for water use. Similar activities occurred at Bac Lieu site in the Mekong delta, Vietnam where rice and shrimp growers need to agree on the management of water salinity.
Water management and allocation negotiation tools	- The ComMod approach used at each of the project sites supports the co-construction of a common representation of the water management issue at stake. The objective is, at least, to facilitate communication among the concerned stakeholders, to share and integrate relevant academic, expert, as well as indigenous knowledge and to improve each stakeholder understanding of other concerned people points of view. - Most of the time, the specific methodology tailored to examine the local concrete problem at each site includes a set of negotiation support tools, usually different kinds of models co-constructed with the stakeholders. The respective effectiveness of these tools is being assessed following a common methodology. This is a difficult task as the type and features of these tools used in specific cases differ significantly depending on the characteristics of the problem at stake, the main processes included in the models, the local institutional context, etc.
Institutional arrangements enhancing basin level water productivity	- The objective of the ComMod facilitation of the negotiation among water users is to improve both the environmental state of the resource and users' livelihoods, especially for disadvantaged groups among them. Such improvements could require organizational change and / or simpler technological change. -Technical change is not directly promoted in this project but it either encourages the improvement of stakeholders' interactions and institutional arrangements (such as in the case of Kengkhar site in Eastern Bhutan) or is the consequence of them (like in the case of Lingmuteychu site in West-central Bhutan or, in a less important way, at Mae Hae site in Northern Thailand). PN25 has been publishing several stories of, successful or failed, negotiation processes leading or not to institutional arrangements. - The most successful case occurred at the Lingmuteychu site in Bhutan (where the national policy is supporting community-based NRM). The creation by representatives of 7 staggered villages of a "Watershed Management Committee" (WMC) regulating natural resource management at the sub-watershed level was a major outcome of the ComMod process and the WMC has been operating satisfactorily for a couple of years now.

	- At Mae Hae site in Northern Thailand, leaders from the 14 staggered villages and the village network expressed the need to share their common understanding of the water conflict with villagers, and also the need for restructuring the village network functioning. They continued the negotiation process while the designer and leader of the ComMod process was writing his dissertation in France and finally reached an agreement on the limitation of the size of the water pipes used for the irrigation of horticultural crops.
3.4 Are there other CPWF outputs that your project is contributing to?	Your project may provide new knowledge and information for other outputs on the attached list. List any here and comment against them. Do you see any areas where you could/should work more closely with another CPWF project? (this may not be applicable to your project)
Options for integrating forest and water management	- Forest and water management are linked at the most recently opened project sites of Nam Haen and Doi Tiew in Nan province, Northern Thailand (conservation and reforestation of the upper catchment in above the major Queen Sirikit reservoir), and Radi (reforestation of hot spots to limit land degradation by landslides above rice terraces) and Kengkhar (reforestation for the protection of water capture around springs) sites in Eastern Bhutan. - At Mae Hae site in Northern Thailand, land, forest and water management are closely related as farmers encroach the forest in the upstream area to get better access to water and quality soils for crop production. This reduces the amount of water supplied to lower farms and creates a conflict with the local forester. These interactions are explicitly represented in the ABM.
Livestock and environmental decision support systems	At the Doi Tiew site in Nan province, the ComMod process is looking at the effects of livestock grazing on forest regeneration in an area where Hmong farmers' activities are being affected by the creation of a new National Park and reforestation activities of the upper catchment by different government institutions above the strategic Queen Sirikit reservoir.

3 (c) OUTCOMES AND IMPACT

Before attempting this section access these web pages for an overview of the basis of how we approach outcomes and impact. They are from the IDRC web page on 'Outcome Mapping'). http://web.idrc.ca/uploads/user-S/10960530301karaoke.swf http://web.idrc.ca/en/ev-64698-201-1-DO_TOPIC.html	
3.5 What are the 'outcomes' of your research to date?	What outcomes have been generated by the outputs (as listed in 3.1) that you project has yielded to date? Please be basin specific.
Output (from 3.1)	**Resultant outcomes**
Teaching & training modules	- E-learning modules and the documentation of case studies are available on the Ecole-commod at the related http://www.ecole-commod.sc.chula.ac.th website. A link was built between this website and the PN25 one. - The PN25 project case studies were used to illustrate the ComMod collaborative modelling approach in various lectures at several universities and training events in Thailand and Europe during 2008. - In April 2008, the project was invited to present the ComMod approach and relevant case studies for conflict resolution during 6 hours of lectures at the Faculty of Political Science of Chulalongkorn University in Bangkok, Thailand. - In May 2008, the project was invited to make a presentation at the 4th National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change" on 27-28 May 2008 in Chiang Mai (see details in the list of project publications during the review period below). - In October 2008,Warong Naivinit organized an innovative special seminar at his Faculty of Agriculture, Ubon Rajathanee University, during which several rice farmers presented and discussed the features and use of this computer agent-based model with some 70 master students and lecturers-researchers from this regional university. A flash presentation of this unusual event is available under the "News" section on the PN25 website. - Following this event, a team of researchers from Prince of Songkla University in Southern Thailand requested the organization of a short ComMod training course focusing on the mitigation of an irrigation water sharing conflict in a key rice growing area of Nakhon Sri Thammarat Province. - Due to several requests for training received by the project, the decision was made to hold a 2-week long regional course on ComMod at Chulalongkorn University in Bangkok in May 2009 with financial support granted by the Agropolis Foundation-managed Echel Eau Project.
New methodologies for better communication and coordination mechanisms	- ComMod processes always improve dialogue and knowledge sharing among the participants, but the establishment of improved coordination mechanisms is more difficult to secure (successes and failures were already mentioned above). - At Mae Hae site in Northern Thailand, Panomsak Promburom found that the involvements of local and higher-level institutions (village leaders and foresters in his case) are essential for the establishing social dynamics leading to improved coordination and negotiation mechanisms. This was already observed at Lingmuteychu (a success story) and Mae Salaep (a failed attempt) pioneer sites. - At the Lingmuteychu site in West-Central Bhutan the "7 villages" computer model has been used with villagers to facilitate discussions about the irrigation water sharing game and to propose new steps making use of this innovative tool.

A knowledge base at each site, based on indigenous and scientific knowledge	- The families of models (games, ABMs, hybrid simulators) developed at each site are as many syntheses of the existing knowledge about the question they help to examine. All are freely available and will be used by the group of young Asian lecturers-researchers being trained by the project when they return to their respective universities. - The RPGs and ABM computer models developed on specific issues can also be used to build more generic tools to facilitate communication, coordination and conflict mediation. This is the case of the above-mentioned "7 villages" computer model based on a previous RPG used at the Lingmuteychu catchment in West Central Bhutan to support the creation of a "Watershed Management Committee". The rather abstract interface of this ABM can be used to emphasize the importance of communication and coordination among irrigation water users at the whole catchment level, at this site but also at other locations.
3.6 Who has used these outcomes? Provide evidence to justify your answer.	List the **intended users** of these outcomes and tell us how they have been involved in their development to date (if at all) and how they have used resulting technology/information. Refer not only to the various specific users, but also separately to the basin/s in which they operate. We are looking for 'behavioural change' amongst your users (some of whom may not be 'intended').
Outcomes	**Intended/unintended users and their involvement/uptake in individual basins.**
Training courses locally organized	- Following a request received from a lecturer-researcher at the Faculty of Natural Resources of Prince of Songkla University in Southern Thailand, a 3-day training course focusing on the use of ComMod to mitigate an irrigation water sharing conflict in a rice growing area of Nakhon Sri Thammarat Province will be organized in late January 2009. - Due to several requests received from new potential partners, a 2-week ComMod training course is planned at Chulalongkorn University in Bangkok in May 2009 with financial support granted by the Agropolis Foundation-managed Echel Eau Project. We expect the participation of a very diverse group of around 18-20 trainees from Asia, Africa, Europe, and Canada. - In countries where the policy and institutional context is not yet supportive enough, the strategy adopted by the project is to train several local lecturers-researchers at Ph.D. level on collaborative modelling approach and action research for resilient water management for them to disseminate it later on in their teaching, training and research activities at regional universities. Most of the Asian Ph.D. students will be completing their doctoral research by May 2009 and therefore the above-mentioned training course will be used to train them in the preparation and management of such events.
Setup of local institution	- The "Watershed Management Committee" (WMC) managed by representatives from 7 staggered villages to regulate natural resource management at the sub-watershed level in Lingmuteychu site, West-central Bhutan, has been operating satisfactorily for the last 2 years. - At Mae Hae site in Northern Thailand, Panomsak Promburom reports that after the co-organization and collective investigation of the irrigation water problem by researchers and local institutions to facilitate social learning and awareness of the issue, the local (14) village network and social leaders expressed the need to restructure and strengthen their organization.
Development / extension workers act more as facilitators rather than experts	- This is a long term objective to be achieved when the Asian Ph.D. students will be returning to their respective universities to train development workers in the national languages. - The evaluation of completed case studies is showing that local development workers who participated in these processes (such as in Mae Salaep & Mae Hae in Northern Thailand, and Lam Dome Yai watershed in Northeast Thailand) better understand their new role and appreciate the use of tools facilitating communication, knowledge exchange, and collective decision-making.

3.7 Beyond what you have told us so far, what dissemination / information sharing activities are you undertaking?	This question is meant to indicate what dissemination pathways you are developing with your peers and with your intended users. The answer also explains how you are going to strengthen (if necessary) your current experiences in 3.6 above. Several kinds of dissemination / information sharing activities are implemented: - The new PN25 website is gradually improved to provide many project documents (articles, reports, slide shows, flash animations, short movies, etc.) to interested people. - More scientific papers were prepared and published in 2008 (see below in this report), members of the project attended conferences, particularly Asian Ph.D. students. - New training events are being organized for the last year of the project, - A brochure, folder and bookmark were distributed during 2008 in both English and Thai languages. - Thai Ph.D. students are members of the new "ThaiSim" association and contribute short papers in its newsletter. - Participatory modelling and simulation workshops were still organized at several project sites in 2008 (Kengkhar in Bhutan, Doi Tiew in Northern Thailand, Lam Dome Yai in Northeast Thailand and Bac Lieu in Vietnam) to facilitate information and knowledge exchange among stakeholders, and beyond the limited number of workshop participants to whole village communities.

3.8 How would you describe your projects contribution so far to the CPWF mandate of producing international public goods?

Type of international public goods	Status
A methodology for knowledge exchange an negotiation among stakeholders	- The relevance and flexibility of the ComMod methodology to facilitate the mediation of water management conflicts at the catchment scale can now be considered as verified in the context of Mekong countries. More journal articles and research reports need to be produced during the last year of the project to document and compare the project case studies implemented in 3 riparian countries. - Early users in Bhutan would like to up-scale its use or are introducing it in their teaching and training activities (like at several universities in Thailand). - There is a growing interest (in particular IUCN, IFAD, IFPRI talked to us in 2008 to use project case studies in their documents/publications) about this approach and a good potential to train new partners in the future (World Fish Center in Penang, CIFOR-IRD project in Laos, NGOs in Cambodia, Global Land Project-Hokkaido node in Japan, CSEAS at Kyoto university, etc.).
An emerging network of Asian ComMod users	- In the final year of the project, it will be important for PN25 to consolidate the emerging network of ComMod users beyond the completion of the on-going M.Sc. and Ph.D. theses. The organization of a 2-week long ComMod training course in Bangkok in May 2009 will contribute to this objective. It will also be necessary to take time during the last PN25 technical workshops to discuss the continuation of the collaboration beyond Phase I of the CPWF. - Several of the project Thai Ph.D. students were instrumental in setting up the new "ThaiSim" association in 2008. They attend its meetings and contribute short papers to its newsletter.

3 (d) TECHNICAL AND/OR MANAGEMENT ISSUES

3.9. Any problems or constraints - deviations - in the past year?	- There was no major problem in the operation of the planned project activities during 2008. This one-year extension of the project requested in March 2008 was granted at the end of the year. - CIRAD is also correspondent of the French MAE supported Echel-Eau Project for the Mekong basin and benefit from complementary support from this project. This is becoming crucial toward the end of the project as PN25 funding has already fully used for some budget items (like international travel for the project leader). - The PN25 technical workshop planned for late 2008 has to be postponed to 4-8 May 2009 because of political events in Thailand.
3.10 Any adjustments you would like to make in the coming year to make the project more efficient and effective?	- Now that the one year extension at no cost is being granted, several adjustments in some partners budgets need to be made, especially to ensure their participation in the last couple of technical cum writing workshops planned for early may and October 2009 (see details below in section 10 of this report).
3.11 Comment on your interactions with Theme Leaders	- I met with Dr. Doug White at IFWF2 in Addis Ababa and his comments on the previous six monthly report were useful. I circulated them among PN25 team members.
3.12 Comment on your interaction with basin coordinators.	- I also met with Dr. David Clayton at IFWF2 in Addis Ababa where he was (obviously) too busy to discuss PN25 activities. His support to PN25 participation in these key meeting was much appreciated.
3.13 Comment on your interactions with other CPWF and non CPWF projects in the basin.	- IFWF2 was an excellent opportunity to meet with several members of CPWF management team and to interact with representatives from other CPWF projects operating in the Mekong basin, especially the M-Power team.

4 CAPACITY BUILDING

Please tell us about your capacity building activities over the year. This information is useful for us as we take forward our capacity building program. There is a line for 'identified needs' so you can comment on capacity building activities that would be useful in your project and that would add value to the CPWF as a whole.

Category	Basin location	Activities and expected outcomes
Bachelor students	Bhramapoutre	**Aita Kumar Bhujel**: a diploma degree student at Kasetsart University in Bangkok during July 2008 – May 2009. Aita was a key collaborator from RNR-RC Bajo at the Lingmuteychu site in West-central Bhutan. During his stay in Thailand he is studying integrated watershed management and interact with other project Ph.D. students working at different sites. He will also prepare a monograph on ComMod illustrated, by the Lingmuteychu and Radi case studies, to be used in teaching and training activities in Bhutan.
Master student	Mekong	**Manitchara Thongnoi**: a master student registered in the "Integrated farming" program of the Faculty of Agriculture at Ubon Ratchatani University (UBU). She works on the analysis of the various kinds of effects of the project

		collaborative modelling approach on participating farmers at the Lam Dome Yai site in Lower Northeast Thailand, a site managed by Warong Naivinit (see below). She participated in the last field activities (participatory simulations sessions followed by interviews of participants) during the first semester and spent the second one analyzing her data and writing her Master thesis. She will defend her dissertation at UBU in late February 2009.
Ph.D. students	Mekong & Bhramapoutre	**Cécile Barnaud**: she defended her doctorate dissertation in Human, economic and regional geography at Paris Ouest Nanterre-La Défense University on 6 May 2008 and received the unanimous "congratulations" of the jury. She is now living in Montpellier looking for a job. **Le Canh Dung:** he spent 2008 between his research site in Bac Lieu province in the Mekong delta and Chulalongkorn University in Bangkok where he is registered in the Agricultural technology program at the Faculty of Science. He received assistance from a Vietnamese computer scientist who, with strong support from Dr. Christophe Le Page, helped him to build his ABM. The model will be presented to the local stakeholders in early 2009 and field work completed during the first quarter. He is planning to defend his dissertation at Chulalongkorn University in Bangkok in late April 2009. **Warong Naivinit**: A lecturer at the Faculty of agriculture of Ubon Ratchathani University (UBU) in Lower Northeast Thailand). He is registered in the Agricultural technology program at the Faculty of Science of Chulalongkorn University in Bangkok & in the Human geography program at Paris Ouest Nanterre-La Défense University in France under the "co-tutelle" system. In the first semester of 2008, he completed a series of field workshops based on participatory simulations at his Lam Dome Yai watershed site to finalize the co-construction of an ABM (name BMM after the local Ban Mak Mai village) model with participating rice farmers. He spent most of his time during the second semester writing his Ph.D. thesis in Bangkok with the project staff and will defend his dissertation at Chulalongkorn University in Bangkok in late April 2009. **Pongchai Dumrongrojwatthana:** a junior lecturer in tropical ecology at the Faculty of Science, Chulalongkorn University. He is registered in the Agricultural technology program at the Faculty of Science of Chulalongkorn University in Bangkok & in the Human geography program at Paris Ouest Nanterre-La Défense University. In 2008, he focused on field data collection on the interaction between livestock grazing and forest conservation & regeneration at the Doi Tiew site in the upper catchment of Nan Province in North Thailand, above a major reservoir used to irrigate the Central plain of Thailand. He used this dataset to model the dynamics between vegetation change and cattle rearing in the upper watershed of Tha Wang Pha District in Nan province and tested a first version of his tool with local herders and foresters in the last quarter. **Panomsak Promburom:** his field work is completed and his main activities in 2008 were scenario simulation and analysis of the results. This would provide further understanding and suggestion on how individual, group and local institution contribute to agricultural production, economic return, equity, and performance of water used in the system. He is also writing his dissertation to be tentatively submitted in April-May 2009, and defended at Lyon 1 University in June 2009. **Tayan Raj Gurung:** he completed the first year of his doctoral research

		program by focusing on the implementation of field activities at the new Kengkhar site in Eastern Bhutan where he held a first gaming and simulation workshop in April 2008. The village water capture and distribution system was also improved in 2008 with the construction of 7 interlinked tanks at each of the springs. A second phase of improvement of the local water system will look at rainwater harvesting from the village main buildings in early 2009. With support from Dr. Christophe Le Page, he also built a first prototype of ABM to be used for simulating water distribution rules at the village level.
Post docs		None.
NGOs		None.
NARES	Mekong & Bhramapoutre	- The 5 above-mentioned Asian Ph.D. students are members of NARES institutions in their respective countries, mainly regional universities located in the lower and medium parts of the Mekong basin. - In 2008, local extension workers participated in field workshops orgnaized at several sites in Kengkhar, Eastern Bhutan, Doi Tiew and Lam Dome Yai sites, Northern and Northeastern Thailand, and the evaluation results show that some of them say that they learnt a new way to interact with farmers.
Farmers	Mekong & Bhramapoutre	- Beyond the usual project field workshops organized every year at the different sites, in which some 20 villagers take part, more attempts are being made to provide feedback from these key events to the whole village communities. - As mentioned above, the presentation by local farmers of "their" Ban Mak Mai model to visiting researchers of PN25 in their village during the mid-year project technical workshop in June 2008, and, far more formally, in a special seminar at the Faculty of agriculture of Ubon Rajathanee University attended by some 70 master students and lecturers-researchers clearly demonstrated the improved capacity of these rice growers in using such rather sophisticated tools to examine important dynamics of their social-agro-ecological system.
Scientists		- Requests for participating in next ComMod for IRRM training course to be held at Chulalongkorn University in Bangkok in May 2009 were received from scientists working in different countries (Cambodia, Vietnam, Laos, China, Japan, Philippines, Malaysia, Rwanda, Niger, Mexico, Canada, Netherlands).
Others (identify)		
Future needs		- In some cases, the limited autonomy of Ph.D. students in developing their own models under the CORMAS simulation platform is still a concern, as well as sufficient analytical skills to interpret field data from a rather complex collaborative modelling approach. This is understandable as the fundamental principles of the ComMod scientific posture are very different from their previous academic background making its adoption rather difficult. - Due to limited funding, the project was unable to fund another one-year diploma degree training program for the second key field collaborator at the Lingmuteychu site in West-central Bhutan, Mr. Gyenbo Dorji. This is a pity as Gyenbo has been an outstanding facilitator at this successful site since the beginning of the project in 2005.

5 PROJECT PROCEDURES FOR DATA COLLECTION/STORAGE AND SHARING

Please note that under the Project Agreement (standard clauses), that all data collected by your project is to be made freely available as an international public good. We are keen to ensure that data is shared as widely as possible both within the CPWF and to the wider community. If you want to discuss this issue please contact Dr Francis Gichuki on f.gichuki@cgiar.org.

(a) Technical elements	
5.1. Data collected: what is the extent of your data collection to date?	- Secondary data relevant to the issues at stake were collected at each site and used in conceptualizing the ComMod models. This is reported in details in student dissertations. - Data from surveys and interviews are stored in electronic format / files, including the results of the Role-Playing Games used in field workshops at each of the project sites. C - Computer simulation models built under PN25 at most of the sites by using the CORMAS multi-agent simulation platform are all freely available on the CORMAS website.
5.2 Can any of this information be usefully shared now?	- The best source of data collected during PN25 will be the students' master and Ph.D. dissertations. Their pdf files will be available on the project website. - The multi-agent models built under PN25 are designed to facilitate exchanges among local stakeholders about a given local water management problem and therefore are site specific. But an attempt is being made to produce more generic simulation tools to be shared with a wider audience. This is one objective of the "7 villages game" used at the Lingmuteychu site in Bhutan. Its rather abstract interface can be used at other locations to illustrate the importance of stakeholders' communication and coordination mechanisms in the management and sharing of irrigation water among staggered users in a catchment.
5.3 Data analysed: what is the extent of your data analysis to date?	- This project is based on the use of an iterative and evolving modelling approach. The construction of models (conceptual ones, computer models, role-playing games, or hybrid ones) alternate with field activities during which these communication tools are presented to local stakeholders, criticized and enriched. Therefore, new data and knowledge is gradually integrated into the models. - Data analysis and integration of new knowledge or stakeholders' requests in final ABM models is completed at the oldest sites (Mae Salaep, Mae Hae, Nam Haen in Northern Thailand; Lam Dome Yai in Northeast Thailand, Bac Lieu in the Mekong delta, Vietnam and Lingmuteychu and Radi sites in West-central and Eastern Bhutan respectively. Some students are still running complementary scenario exploration and simulation exercices in the laboratory. - Data collection and preliminary analysis is still going on at the more recent ones (Doi Tiew in Northern Thailand and Kengkhar in Eastern Bhutan).
5.4 Information shared: what knowledge or information have you shared to date and who with?	- The main objective of the ComMod approach and methodologies is to facilitate information and knowledge exchange among stakeholders. At each site, series of participatory modelling workshops were conducted with the different stakeholders (frequently their diversity increased with time) to share information and knowledge on the specific problems at stake, on the diversity of points of view among local actors, and on possible scenarios for resource use in the future. - From one workshop to the next, new knowledge is generated and is gradually integrated into the models used to facilitate the exchanges among stakeholders, and, at a later stage, to simulate possible future scenarios of their choice. - Attempts are made to communicate the simulation results to larger groups of people, like the whole village communities. This was done through the use of hybrid simulator

	allowing the rapid replay of long gaming sessions. This technique can also be used to up-scale the use of the modelling tools by replaying gaming sessions with the computer during short meetings with busy decision-makers for them to understand what happened during the field workshop in a time efficient way. - It is also possible to play new sessions more rapidly with a few players in the room as well as virtual agents making decisions on resource management in front of the audience following the events on the screen.
(b) Project Management element:	
5.6. What notable management and implementation lessons have you learned to date, and what would you do differently as a result?	- Project management between the PN25 office located at Chulalongkorn University in Bangkok, CIRAD accountants in Montpellier and CPWF office in Colombo was again too much time consuming during 2008 for the project leader. For example the completion of the financial audit for 2007 dragged on during the whole year! - This was complicated by the departure of the very skilled project secretary from PN25 office in Bangkok on October 1, 2008. - With the termination of the project leader assignment at Chulalongkorn University in Bangkok, the Head of his research unit at CIRAD, Mrs. Martine Antona has been interacting on a weekly basis with the accountants and her support is very much appreciated.

6 WRITTEN MATERIALS

Please provide a copy of the materials as an annex to this report in electronic format. Materials will be posted on the CPWF web site as appropriate with your agreement and when in final form.

Type/title	Related to which Output	Expected Date of Publication[1]	Name of journal or main user of materials	Author/s
PAPERS				
Papers for national seminar /conference / workshop				
Chapter in Proceedings of national conference:	Companion Modelling for Resilient and Adaptive Social Agro-Ecological Systems in Asia. Invited paper.	May 2008	Proceedings of the 4th National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change", 27-28 May 2008, Empress Hotel, Chiang Mai, Thailand. 90-104.	Trébuil G. on behalf of the ComMod Group.
Chapter in Proceedings of national conference:	Conceptualization of agricultural system and watershed resource management through participatory modelling process	May 2008	Proceedings of the 4th National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change", 27-28 May 2008, Chiang Mai. 379-386 (in Thai).	P. Promburom

[1] This may not be applicable in all cases (i.e. for 'grey' publications such as a survey sheet).

Chapter in Proceedings of national conference:	Collaborative modeling to represent interaction between water and labor availability in lower northeast Thailand	May 2008	Proceedings of the 4th National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change", 27-28 May 2008, Chiang Mai. 161-170 (in Thai).	Naivinit W, Le Page C, Thongnoi M, and G. Trébuil.
Chapter in Proceedings of national conference:	Area Study and Companion Modelling to Integrate Multiple Interests in Upper Nan Watershed	May 2008	Proceedings of the 4th National Agricultural Systems Conference "Agriculture for Community and Environment Ready to Handle Climate Change", 27-28 May 2008, Chiang Mai. 371-378 (in Thai).	DumrongrojwatthanaP., Barnaud, C., Gajaseni, N., and G. Trébuil.
Papers for international seminar/ conference / workshop				
Paper for international conference:	Companion Modelling for Integrated Renewable Resource Management: A new collaborative research approach to create common values for sustainable development.	August 2008	Communication at the 2nd ISC2008 Conference, 20-22 August 2008, Basel, Switzerland.	Ruankaew N., Le Page C., Gajaseni N., Barnaud C., van Paassen A., and Trébuil G.
Chapter in proceedings of international conference:	Participatory Agent-Based Modeling and Simulation of Rice Farming in the Rainfed Lowlands of Northeast Thailand	January 2009	Communication at the "Asian Simulation and Modelling (ASIMMOD) 2009. 22-23 January 2009, Bangkok, Thailand	Naivinit W., Le Page C., Thongnoi M., and G. Trébuil.
Chapter in proceedings of international conference:	Collaborative Multi-Agent Modelling to Improve Farmers' Adaptive Capacity to Manage Water and Migrations Dynamics in Northeast Thailand	September 2008	Proceedings on CD-ROM of 13th IWRA World Water Congress on 1-4 September 2008, Montpellier, France. 15p.	Naivinit W., Trébuil G., Thongnoi M., and C. Le Page.
Chapter in proceedings of international conference:	Role-playing games and institutional engagement for modelling land and water management in a northern Thailand watershed	November 2008	Proceedings of 2nd International Forum on Water and Food of the CPWF. 9-14 November 2008, Addis Ababa, Ethiopia. Vol.I: 160-163.	P. Promburom and F. Bousquet.
Chapter in proceedings of	Effects of companion modelling on water management:	November 2008	Proceedings of 2nd International Forum on Water and Food of	T.R. Gurung, P. Promburom, W. Naivinit, M.

international conference:	comparative analysis across five sites in Bhutan and Thailand		the CPWF. 9-14 November 2008, Addis Ababa, Ethiopia. Vol.II: 210-216.	Thongnoi, C. Barnaud, and G. Trébuil.
Chapter in proceedings of international conference:	Agent-based modeling and simulation of integrated rice-shrimp farming in Bac Lieu Province, Mekong Delta, Vietnam.	November 2008	Proceedings of 2nd International Forum on Water and Food of the CPWF. 9-14 November 2008, Addis Ababa, Ethiopia. Vol.II: 262-266.	Dung, L.C., C.T. Hoanh, C. Le Page, and N. Gajaseni.
Chapter in proceedings of international conference:	Agent-based modeling of the interaction between water and labor availability in the rainfed rice ecosystem of Northeast Thailand	November 2008	Proceedings of 2nd International Forum on Water and Food of the CPWF. 9-14 November 2008, Addis Ababa, Ethiopia. Vol.II: 267-270.	Naivinit W., Le Page C., Thongnoi M., and G. Trébuil.
Chapter in proceedings of international conference:	Agent-based modeling to facilitate resilient water management in Southeast and South Asia	November 2008	Proceedings of the CGIAR Challenge Program on Water and Food 2nd International Forum on Water and Food, Addis Ababa, Ethiopia, November 10-14, 2008. Vol.II: 271-274.	C.T. Hoanh, C. Le Page, O. Barreteau, G. Trébuil, F. Bousquet, F. Cernesson, , C. Barnaud, T.R. Gurung, P. Promburom, W. Naivinit, L.C.Dung, P. Dumrongrojwattha na and M. Thongnoi.
Chapter in proceedings of international conference:	Interactive models to catalyze collective water management: a companion modelling approach in northern Thailand	November 2008	Proceedings of the CGIAR Challenge Program on Water and Food 2nd International Forum on Water and Food, Addis Ababa, Ethiopia, November 10-14, 2008. Vol.II: 292-298.	Barnaud C., Promburom P., Trébuil G. and F. Bousquet.
Powerpoint presentations			All the above-listed communications have associated ppt files	
PUBLICATIONS				
Journal article:	Facilitating dialogue between aquaculture and agriculture: lessons from role-playing games with farmers in the Mekong Delta, Vietnam.	April 2009?	Submitted to Water Policy journal for a special Issue on trade-off and synergies in water management across scales.	Dung, L.C., C.T. Hoanh, C. Le Page, F. Bousquet and N. Gajaseni,
Journal article:	Combining role-	2009	Environmental	Promburom P., and

	playing games, qualitative inquiry and Multi-agent system modeling to support natural resource management in a northern Thai watershed		Modeling and Software journal for a special Issue on Modeling with stakeholders (Re-submitted).	F. Bousquet.
Journal article:	La modélisation d'accompagnement pour une gestion concertée des ressources renouvelables en Thaïlande (Companion modelling for concerted management of renewable resources in Thailand)	2008	Economie rurale, vol. 303-305: 39-59.	Barnaud C., Trébuil G., Promburom P., and F. Bousquet.
Journal article:	Area Study Prior to Companion Modelling to Integrate Multiple Interests in Upper Watershed Management of Northern Thailand.	2008	Tonan Ajia Kenkyu (Southeast Asian Studies), Kyoto University, Japan, 45(4): 559-585.	Barnaud C., Trébuil G., Dumrongrojwattha na P., and J. Marie.
Working paper:				
Research paper:	Research reports will be prepared for the CPWF series in 2009.			
Policy paper / brief:				
Book/Monograph:	New methodology on collaborative modelling for resilient water management	2009	Collective book on the evaluation of some 30 ComMod case studies including several from this project	M. Etienne et al. (several PN25 researchers are co-authors of several book chapters)
Other: Field workshop report	Companion modelling workshop on cattle and forest management In Doi Tiew Village and Tha Wang Pha District Office	November 2008	Workshop report, 46p.	Dumrongrojwattha na P.
TRAINING MATERIALS				
Course materials: ppt slide shows, some with audio comments on case studies available on the PN25 & Ecole-Commod websites	Teaching and training modules to disseminate the ComMod approach and results of case studies in the Mekong & Bhramapoutre basins	2008	General public	Various team leaders from each of the project sites
Other: ppt slide shows	Teaching and training modules to disseminate the ComMod approach	2008	Students	Used in lectures at various universities in Asia and Europe

SURVEY MATERIALS				
Survey proforma:				
Analysis proforma:				
PROJECT INFORMATION MATERIALS				
Website: www.cpwf25.sc.chula.ac.th	PN25 – CPWF: Companion modelling for resilient water management	Launched in late October 2008	Hosted by Chulalongkorn University server, Bangkok, Thailand	Anuttara Tianvorakoon, webmaster
Poster:	Companion Modeling for resilient water management: Stakeholders' perceptions of water dynamics and collective learning at the catchment scale.	November 2008	PN25 Project at the Second International Forum on Water and Food (IFWF2), CPWF - CGIAR, 10-14 November 2008, Addis Ababa, Éthiopia. First price for best poster.	Le Page C., Tianvorakoon A., C.T. Hoanh, and Trébuil G.
Brochures:	Companion modelling in Southeast and South Asia to facilitate integrated management of renewable resources with stakeholders	January 2008	12 pages, Thai and English versions.	N. Gajaseni, N. Ruankaew, C. Le Page, and G. Trébuil.
Newsletters:	Contributions by Thai Ph.D. students to the ThaiSim Association newsletter	Late 2008	Short articles on PN25 case studies	Dumrongrojwattha na P. and W. Naivinit
Others: Folder and bookmark	Companion modelling in SE and South Asia	February 2008	Project folder and bookmark	
ANY OTHER WRITTEN MATERIALS THAT DO NOT FALL UNDER THE ABOVE CATEGORIES				

7 COMMUNICATIONS ACTIVITIES

Type	Where held	When held	Who aimed at	Outcome
PROJECT MANAGEMENT MEETINGS				
Meeting: PN25 Technical Workshop	Kong Chiam District, Ubon Ratchathani province, Northeast Thailand	8-13 June 2008	Review of project achievements & definition of work plan; preparation of short papers for IFWF2, Addis Ababa	The project team is stronger, coordination is strengthened, first collective writing exercises

NATIONAL SEMINARS / CONFERENCES / WORKSHOPS				
4th National Agricultural Systems Conference	Chiang Mai, Thailand	27-28 May 2008	Invitation to present ComMod approach and case studies.	Invited paper & 3 case studies by as many Ph.D. students.
REGIONAL SEMINARS / CONFERENCES / WORKSHOP S				
"Asian Simulation and Modelling (ASIMMOD) 2009	Bangkok, Thailand	22-23 January 2009	Presentation of the ABM of Lam Dome Yai case study.	W. Naivinit's paper in proceedings.
Annual & final meeting of ADD ComMod Project on monitoring & evaluation of ComMod processes	Avignon, France	5-7 March & 20-22 October 2008	Synthesis on the evaluation of ComMod effects on participants	Draft of chapters of a collective book to be published in 2009
INTERNATIONAL SEMINARS / CONFERENCES / WORKSHOP S				
2nd ISC2008 Conference	Basel, Switzerland	20-22 August 2008	Presentation of ComMod approach and one case study.	Dr. Nipada Ruankew's communication and manuscript to journal.
13th IWRA World Water Congress	Montpellier, France	1-4 September 2008	Presentation of the Lam Dome Yai case study & demos of the ABM for 2 days.	W. Naivinit's paper in proceedings.
2nd International Forum on Water and Food of the CPWF	Addis Ababa, Ethiopia	9-14 November 2008	Presentation of Ph.D. students' results and cross-site papers.	4 short papers by Ph.D. students, 2 joint ones in the proceedings & best poster price for PN25.
FARMER GROUP MEETINGS / WORKSHOPS / TRAINING SESSIONS / DEMONSTRATIONS				
Village workshop on the co-construction of the agent-based model in Lam Dome Yai watershed, lower northeast Thailand	Ban Mak Mai village, Det Udom district, Ubon Ratchathani province, Thailand	5-6 February 2008	3 participatory simulation meetings with different small groups of rice farmers belonging to same type to refine BMM agent-based model to represent farmers' decisions when managing different farm types.	The BMM model was fine-tuned with farmers to better represent and simulate their rainfed lowland rice (RLR) growing practices.
Village workshop on the co-construction of the agent-based model in Lam Dome Yai watershed, lower northeast Thailand	Ban Mak Mai village, Det Udom district, Ubon Ratchathani province, Thailand	19 March 2008	Different types of farmers examined labor management practices, particularly those related to the choice between on-farm and off-	BMM model fine-tuned with farmers to better represent and simulate labor use in rice production in relation to

			farm employment.	migrations.
Village gaming & simulation workshop on sharing water from 7 springs among households	Kengkhar village, Mongar District, Eastern Bhutan	24-26 April 2008	Sensitizing local community on water use rules to increase water use efficiency	Workshop based on a 1st RPG played under different modes of communication among players. Led to design of prototype ABMsimulator.
Village workshop on model validation and exploration of scenarios in Lam Dome Yai watershed, lower northeast Thailand	Ban Mak Mai village, Det Udom district, Ubon Ratchathani province, Thailand	13-14 May 2008	A field workshop to validate the BMM model with all types of farming households & to explore scenarios varying the availability of water and labor.	BMM model validated by farmers. Two scenarios looking at interactions between water and labor use & identified, run & discussed.
Communication through the use of ABM in Lam Dome Yai watershed, lower northeast Thailand	Ban Mak Mai village, Det Udom district, Ubon Ratchathani province, Thailand	11 June 2008	BMM model was used by 3 farmers to exchange knowledge on rice farming and labor migrations with ten visiting scientists from PN25 team.	Communication between farmers and scientists was successfully supported by BMM simulations.
Farmers – scientists communication through the use of the BMM agent-based model in Ubon Ratchathani province, lower northeast Thailand	Faculty of Agriculture, Ubon Ratchathani University, Ubon Ratchathani province, Thailand	18 October 2008	BMM model presented & used by 11 farmers to exchange knowledge on RLR farming and labor migrations with lecturers and 70 master students in IT for agriculture & rural development.	Farmers had no problem to present the BMM model features and steps of a simulation and answered easily many questions from the floor.
Nan Khang Reforestation Unit's foresters and Doi Tiew's herders: sensitizing activity before first full field workshop	Tha Wang Pha District Administrative Office,Tha Wang Pha District, Nan Province, Thailand	4-5 September 2008	With 2 groups of stakeholders to test a simple gaming tool based on researcher's understanding of vegetation dynamics influenced by cattle raising & fire, and to sensitize a group of stakeholders	Agreement on representation of vegetation states & dynamics. 2 vegetation state transition diagrams produced with different perceptions & used to build an ABMprototype.

			before a full gaming workshop.	
Field gaming and simulation workshop	Doi Tiew School, Doi Tiew village, Tha Wang Pha District, Nan Province, Thailand	24-26 September 2008	Attended by a combination of farm types and local foresters to improve researchers' understanding & to stimulate collective learning & adaptive management. Test of computer-assisted RPG & computer simulations.	Validation of vegetation state transition diagram with larger group of stakeholders. Herders more concerned by lack of grazing land in near future & aware of need to improve current cattle raising techniques. Improved communication between foresters & herders.
Dissemination of workshop results with non-players in Tha Wang Pha District, Nan Province, Thailand	- Doi Tiew's village meeting room (200 persons) - Doi Tiew village Healthcare centre; - Nam Khang Unit Office; - Sob Khun Royal Project Office	10-11 October 2008	Presentation of the results and lessons learnt from the 1st workshop to villagers and local institutions. Some presentations were made by herders-players.	Posters & 3 short documents in Thai delivered to Nam Khang office,healthcare centre & Sob Khun Royal Project.
Validation of state transition diagram on vegetation dynamics among stakeholders	Nam Khang Reforestation Unit Offict, Tha Wang Pha District, Nan Province	23 December 2008	Validation of state transition diagram by sharing perceptions among foresters, herders & researchers.	Agreement on updated version transition diagram accepted by foresters, herders, and researcher & used to improve ABM prototype before 2nd field workshop in February 2009
OTHER KEY COMMUNICATIONS ACTIVITIES				
VIDEOS / DVD's / PLAYS / SONGS / ORAL MATERIALS PRODUCED / RADIO PRESENTATIONS / TELEVISION				
Clips, short movies & flash animations on website	PN25 website at www.cpwf25.sc.chula.ac.th	2008	Description of field activities	Used in training activities

What other communications activities did you undertake to keep in contact with your stakeholders over the year?

Due to the iterative characteristic of the ComMod approach between modelling and field activities, researchers keep regularly in touch with local stakeholders. At each of the project sites, before and after regular field workshops, the research teams interact with local stakeholders to prepare these key events with them. More importance has been given recently to such sensitizing activities. Following the completion of each field workshop, their effects on the participants are recorded as well as any change in the local context through specific surveys and interviews.

Please note also any plans for the future, and any constraints to communicating as much as you would wish (other than financial resources for international and regional travel - that is a given)
The farming community that you are working with? Policy makers, other decision makers and users of research that your project is aimed at? Your partners? Others – including the general public?

- Electronic communication with the Bhutanese sites is now easier than reported before.
- Following the termination of Ph.D. research programs, there is a risk to loose touch with stakeholders at the oldest sites (like Mae Salaep in upper Northern Thailand) as long as doctorate students do not complete their dissertations, especially when this is done abroad.

What, if anything, do you think the CPWF (as a community) could do to reach a wider audience of scientists, policy makers, development agencies, extension workers, farming communities (others?) to increase the flow of information of your research results to users, or to increase the two way flow of information with your peers and users of your research? (this is not a compulsory question to answer but we want to get your views on how better to get the results of your research out and how better to link with users without discriminating against any groups.)

- By facilitating the preparation and submission of research reports and journal articles before their publication, especially through the availability of science editors who could interact with the authors (especially doctorate students and junior scientists from developing countries).

8 INTELLECTUAL PROPERTY ISSUES

Please note any significant IP issues that may have arisen in the reporting period.
Nothing to mention here. All the models (games, ABMs, etc.) developed under the project as well as the CORMAS simulation platform used by the project modellers are freely available.

9 HIGHLIGHTS OF YOUR WORK THIS YEAR

1. What elements of your work this year do you want to highlight for inclusion in scientific reports that are produced by the CPWF (particularly the synthesis reports that capture your work from perspectives of the new understanding you are contributing to research, the impact for the basins which you work in, and the implications for other basins.)

Our participation in IFWF2 in Addis Ababa, especially the opportunity to meet and discuss research and training activities with many CPWF colleagues (next ComMod for INRM training course in Bangkok, possibility to develop "MAS for MUS" applications about Northeast Thailand multiple use of water systems, etc.).

2. Other than the research being undertaken, are there any project management techniques – including partnerships that would not otherwise have happened, influence on the priority setting process within your institute, closer contact with a farming community, a different way of interacting with end users, access and management of funds, that you have used as a result of being contracted under the CPWF that would not have been possible under other programs? Positive / negative.

(One page only for your responses please to the two sections. Note that we use this information for various reports to committees, for briefing donors, and other communications activities).

10 STATUS OF EXPENDITURES AND RECEIPTS TO DATE (US$)

10 (a) Expenditures

You are required to report expenditures against your summary budget. Please edit the spreadsheet below by adding your total agreed budget and allocating the funds received to date (see question 9 (b)) against the appropriate line item.

For all project sites minus CIRAD* as of 31 December 2008

COST IN US DOLLARS				
Budget Item Code		**Total Budget**	**Expenditures to date**	**Balance Available**
CONTRIBUTED FUNDS				
1	**MATCHING FUNDS**	**370 939,00**	**98 345,04**	**272 593,96**
RESOURCES REQUESTED FROM THE CHALLENGE PROGRAM ON WATER AND FOOD				
2	**PERSONNEL RENUMERATIONS, TRAVEL AND ACCOMMODATION**	**323 035,00**	**156 881,48**	**166 153,52**
2,1	**PERSONNEL COSTS**	**213 785,00**	**121 572,65**	**92 212,35**
2.1.1	**Project Leader**	**56 100,00**	**48 950,00**	**7 150,00**
2.1.2	**Principal investigators (International)**	**16 000,00**	**3 681,04**	**12 318,96**
2.1.3	**Principal investigators (National)**	**86 770,00**	**50 694,90**	**36 075,10**
2.1.4	**Consultants**	**12 027,00**	**3 633,14**	**8 393,86**
2.1.5	**Support Staff**	**22 888,00**	**14 613,57**	**8 274,43**
2,2	**TRAVEL AND ACCOMMODATION**	**109 250,00**	**35 308,83**	**73 941,17**
2.2.1	**Project Leader**	**9 900,00**	**5 302,89**	**4 597,11**
2.2.2	**Principal investigators (International)**	**31 500,00**	**15 558,00**	**15 942,00**
2.2.3	**Principal investigators (National)**	**20 550,00**	**14 054,69**	**6 495,31**
2.2.4	**Consultants & Support staff**	**1 800,00**	**393,24**	**1 406,76**
2.2.5	**Other project participants**			
3	**RESEARCH OPERATIONAL COSTS**	**41 340,00**	**15 158,49**	**26 181,51**
3,1	**EQUIPMENT**	**5 130,00**	**4 552,52**	**577,48**
3.1.1	**Office equipment**			
3.1.2	**Laboratory equipment**	**-**	**725,55**	**(725,55)**
3.1.3	**Field equipment**	**3 930,00**	**3 826,97**	**103,03**
3.1.4	**Other equipment**			
3,2	**COMMUNICATION COSTS AND CONSUMABLES**	**19 110,00**	**10 605,97**	**8 504,03**
3.2.1	**Communication expenses**	**800,00**	**529,27**	**270,73**
3.2.2	**Office supplies**	**6 975,00**	**3 505,64**	**3 469,36**
3.2.3	**Laboratory supplies**	**-**	**116,67**	**(116,67)**
3.2.4	**Field research supplies**	**9 835,00**	**6 081,50**	**3 753,50**
3.2.5	**Other services (please specify)**	**-**	**372,89**	**(372,89)**
	TOTAL OF 2 & 3	**364 375,00**	**172 039,97**	**192 335,03**
4	**MISCELLANEOUS**	**39 085,00**	**16 966,22**	**22 118,78**
4,1	**CONTINGENCY (3%)**	**7 736,00**	**388,60**	**7 347,40**
4,2	**OVERHEADS**	**31 349,00**	**16 577,62**	**14 771,38**
4,3	**Others (please specify)**			
	GRAND TOTAL (2 + 3 + 4)	**403 460,00**	**189 006,20**	**214 453,80**

*** CIRAD financial report for 2008 not available yet.**

10 (b) Receipts

1	Total project budget (a)	435 301.65 $	
2	1st payment received & date	32 858.00 $	30/11/2005
	2nd payment received & date	49 289.00 $	05/12/2006
	3rd payment received & date	149 022,00 $	06/09/2007
	4th payment received & date	-	-
	5th&6th payments received & date	135 504.00 $	11/08/08
	7th and final payment received & date	54 904.00 $	04/12/08
3	Total funds received to date (b)	421 577.00 $	31/12/08
4	Balance of budget remaining (a – b)	13 724.65 $	

10 (c) Matching Funds

Name of Institute	Type of support	Is this as agreed, or are there deviations	Risk to project in the case of deviations
CIRAD, Montpellier, France	Research personnel	The planned amount of matching funds for CIRAD (260,339 US$) is already exceeded.	More extra matching funds will be provided during the one year extension of the project.

10 (d) General Overview

Comment on expenditures compared with project progress - is it on track?	(state any deviations, action taken, any risk to the project) - We are sorry that CIRAD financial report for 2008 was not yet made available to the project leader when submitting this annual report. We do not expect problems, but regret this long delay in the transmission of the report by the accounting office in Montpellier. - Without taking CIRAD expenses into account, the above-mentioned table displays a large amount of unspent funds while in fact the balance available is far more limited as the planned budget for CIRAD (92 545 $) has almost been completely spent, and the large amount of matching funds has already been already exceeded. 5 of the 7 other sites are on track with the last two ones (IWMI and Cemagref) expected to spend more of their funding in the first semester of 2009, especially by participating and funding the PN25 technical workshop to be held during 4-8 May 2009 in Bangkok. - For the project partners to use efficiently the remaining financial resources until the end of 2009 and be able to accompany all the project Ph.D. students until the completion of their dissertations and to deliver quality products and joint publications, the following budget adjustment is requested by the site coordinator at Chulalongkorn University, Bangkok: - Transfer of 4000 US$ from budget item 2.2.3. (Travel and accommodation for the principal national investigator) to 2.1.3. (Personnel / principal investigator / National) to cover the cost of the Ph.D. student monthly allowance until late 2009.
Comment on time spent compared with project progress - is it on track?	(state any deviations, action taken, any risk to the project) - More time is allocated to this project by the current project leader compared to the initial plan, especially because of time-consuming accounting and reporting procedures. - Time spent by collaborators at the different sites is in agreement with the initial plan.

11. CPWF ASSESSMENTS *

Assessment *	Basin Coordinator				Theme Leader				Managing Center Administrator				Consolidated assessment	
	1	2	3	X	1	2	3	X	1	2	3	X		
Is the Project contributing quality outputs towards Basin and Theme priorities?														
Have you verified the progress and dissemination reported?														
Is the Project working according to its plan?														
Is the project sufficiently focused on CPWF objectives?														
Does the project demonstrate a new research approach in the spirit of CPWF?														
Are provisions for stakeholder and end user involvement adequate?														
Are provisions for addressing gender issues adequate?														
Are provisions for addressing environmental issues adequate?														

It is important that you provide feedback to the project leader on any actions suggested to resolve any inadequate assessments as well as observations and comments regarding progress to date and any technical, management or dissemination issues that you would like to provide. These should be provided to the project leader by the Managing Center. A separate page is provided for you to provide these comments.

* Assessment: (1) Good: a high standard of work; (2) Adequate: an acceptable standard of work, but improvements are possible; (3) Inadequate: this aspect of the project is not up to standard and must be improved; (X) Not known.

RECOMMENDATION TO CPWF SECRETARIAT: SATISFACTORY / UNSATISFACTORY / TERMINATE

Is there a need to change the plan of the project. If so, why and how?

Comments to Secretariat from Managing Center to support this recommendation (optional):

Feedback Comments from the Theme Leader to be provided to the Project Leader by the Managing Center
Feedback Comments from the Basin Coordinator to be provided to the Project Leader by the Managing Center

Note: the space available here for comments is not meant to be restrictive – use as much space as necessary